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## SAW Components

### SAW GPS Extractor Filter GPS Extractor

**Series/type:** B7742  
**Ordering code:** B39162B7742E310

**Date:** April 24, 2009  
**Version:** 2.3



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B7742

### SAW GPS Extractor Filter

1575.42 / 859 / 1810 / 1920 / 2140 / 2441.75 MHz

#### Data Sheet



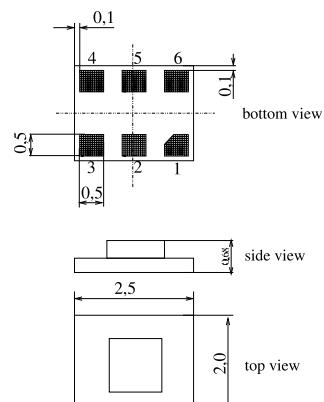
#### Application

- Low loss RF GPS Extractor filter for mobile phones using common antenna for GPS and Cellular/PCS/K-PCS/WCDMA/Bluetooth band
- Placed between antenna, GPS and Cellular/PCS/K-PCS/WCDMA/Bluetooth band
- No switches and control lines required
- Integrated low loss GPS filter with single ended output  $50\ \Omega$
- Very low insertion attenuation in GPS and NON-GPS band
- High selectivity of GPS filter
- Low amplitude ripple in all bands
- Usable passbands 2 MHz (GPS), 70 MHz (Cellular), 120 MHz (K-PCS), 140 MHz (PCS), 60 MHz (WCDMA Band I), 83.5 MHz (Bluetooth)



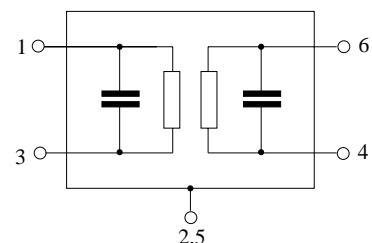
#### Features

- Package size  $2.5 \times 2.0 \times 0.68\ \text{mm}^3$
- Package code DCS6N
- RoHS compatible
- Approximate weight 0.015 g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Electrostatic Sensitive Device (ESD)



#### Pin configuration

- 1 Input antenna
- 3 Output GPS band
- 6 Output NON-GPS band (Cellular/K-PCS/PCS/WCDMA/Bluetooth band depending on external matching)
- 4 To be grounded
- 2,5 Ground





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**Characteristics**

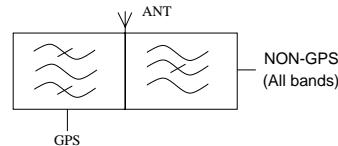
**Matching Circuit 1<sup>1)</sup>: All Bands + GPS (1575.42 MHz)**

Temperature range for specification:  $T = -30^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

Terminating input antenna impedance:  $Z_{\text{ANT}} = 50 \Omega \parallel 6.8 \text{ nH}$

Terminating GPS impedance:  $Z_{\text{GPS}} = 50 \Omega$

Terminating NON-GPS impedance:  $Z_{\text{nGPS}} = 50 \Omega \parallel 6.8 \text{ nH}$



	<b>B7742</b>			
	<b>min.</b>	<b>typ. @ 25 °C</b>	<b>max.</b>	
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$			
Antenna-GPS	1574.42 ... 1576.42 MHz	—	1.1	1.6 dB
Antenna-NON-GPS	824.0 ... 960.0 MHz	—	0.8	1.3 dB
Antenna-NON-GPS	1710.0 ... 1990.0 MHz	—	0.8	1.3 dB
Antenna-NON-GPS	2110.0 ... 2170.0 MHz	—	1.1	1.5 dB
Antenna-NON-GPS	2400.0 ... 2483.5 MHz	—	1.1	1.6 dB
<b>Attenuation</b>	$\alpha$			
Antenna-GPS	824.0 ... 960.0 MHz	33	39	— dB
Antenna-GPS	1710.0 ... 1990.0 MHz	33	37	— dB
Antenna-GPS	2110.0 ... 2170.0 MHz	33	37	— dB
Antenna-GPS	2400.0 ... 2483.5 MHz	35	39	— dB
<b>VSWR (Antenna port)</b>				
GPS band	1574.42 ... 1576.42 MHz	—	1.3	1.8
NON-GPS band	824.0 ... 960.0 MHz	—	2.0	2.5
NON-GPS band	1710.0 ... 1990.0 MHz	—	1.4	2.0
NON-GPS band	2110.0 ... 2170.0 MHz	—	1.6	2.1
NON-GPS band	2400.0 ... 2483.5 MHz	—	1.8	2.4
<b>VSWR (GPS port)</b>				
GPS band	1574.42 ... 1576.42 MHz	—	1.2	1.8
<b>VSWR (NON-GPS port)</b>				
	824.0 ... 960.0 MHz	—	2.0	2.5
	1710.0 ... 1990.0 MHz	—	1.4	2.0
	2110.0 ... 2170.0 MHz	—	1.6	2.1
	2400.0 ... 2483.5 MHz	—	1.8	2.4
<b>Isolation between NON-GPS and GPS path</b>	$\alpha$			
	824.0 ... 960.0 MHz	33	37	— dB
	1710.0 ... 1990.0 MHz	33	37	— dB
	2110.0 ... 2170.0 MHz	33	37	— dB
	2400.0 ... 2483.5 MHz	35	40	— dB

1) Further Matching Circuits are specified in B7742 Appendix



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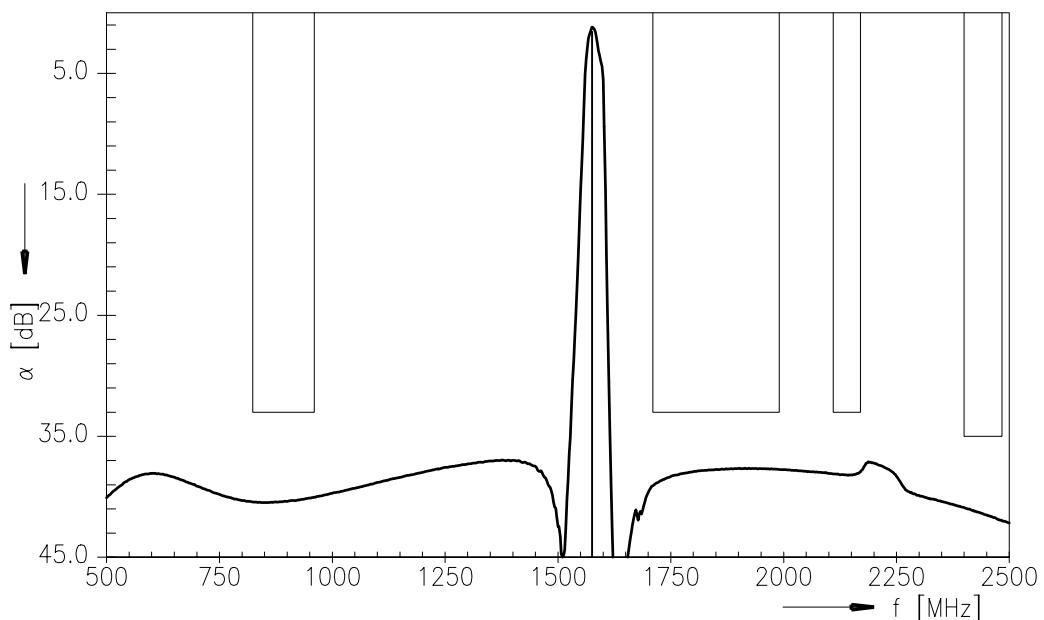
**SAW GPS Extractor Filter**

**1575.42 / 859 / 1810 / 1920 / 2140 / 2441.75 MHz**

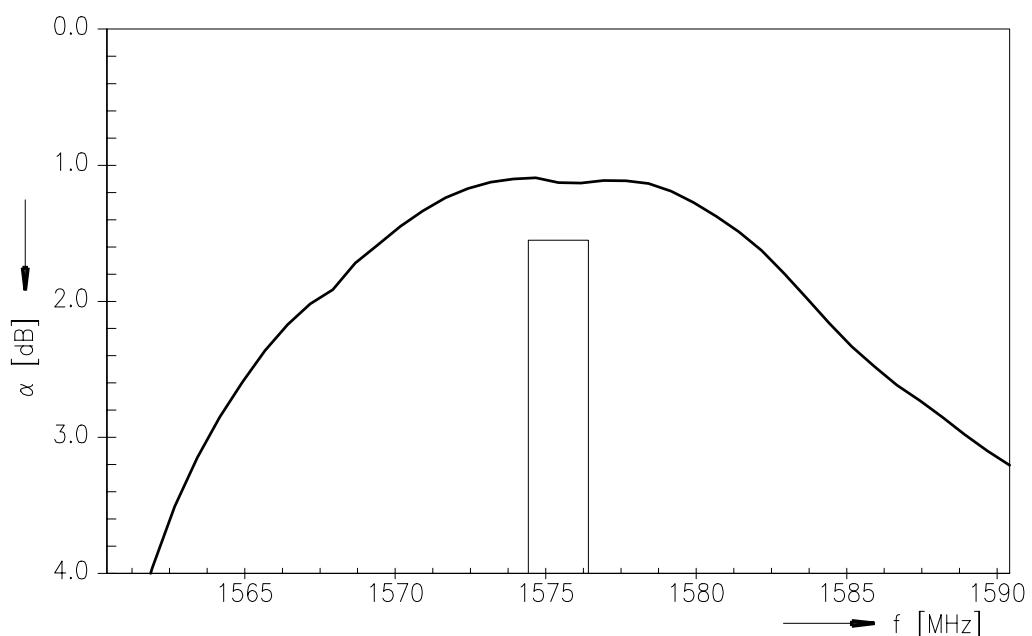
**Data Sheet**



**Antenna - GPS (transfer function for matching circuit 1):**



**Antenna - GPS (transfer function passband for matching circuit 1):**





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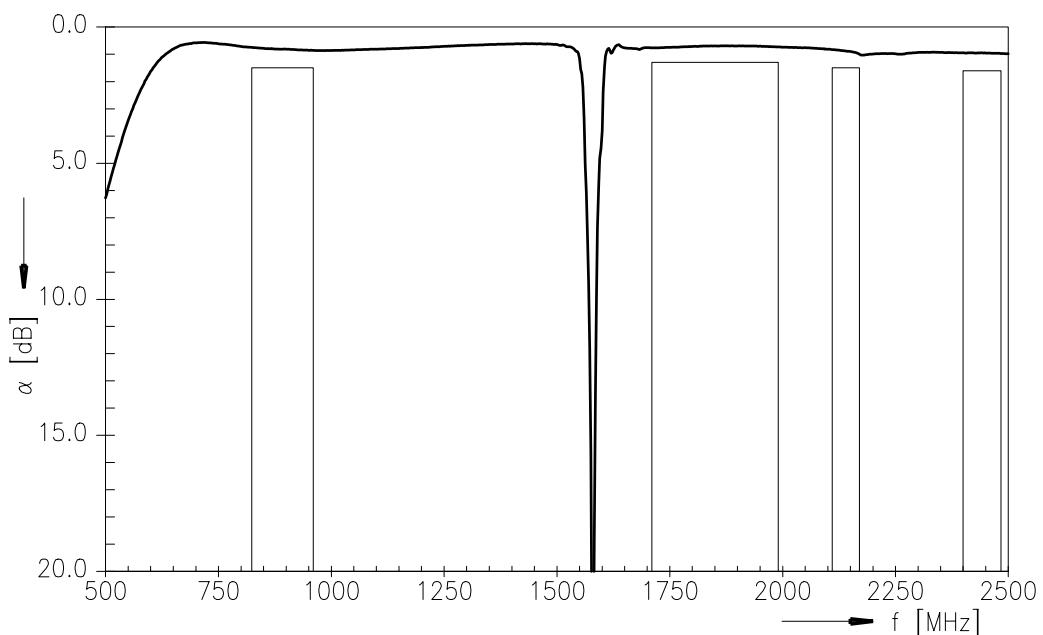
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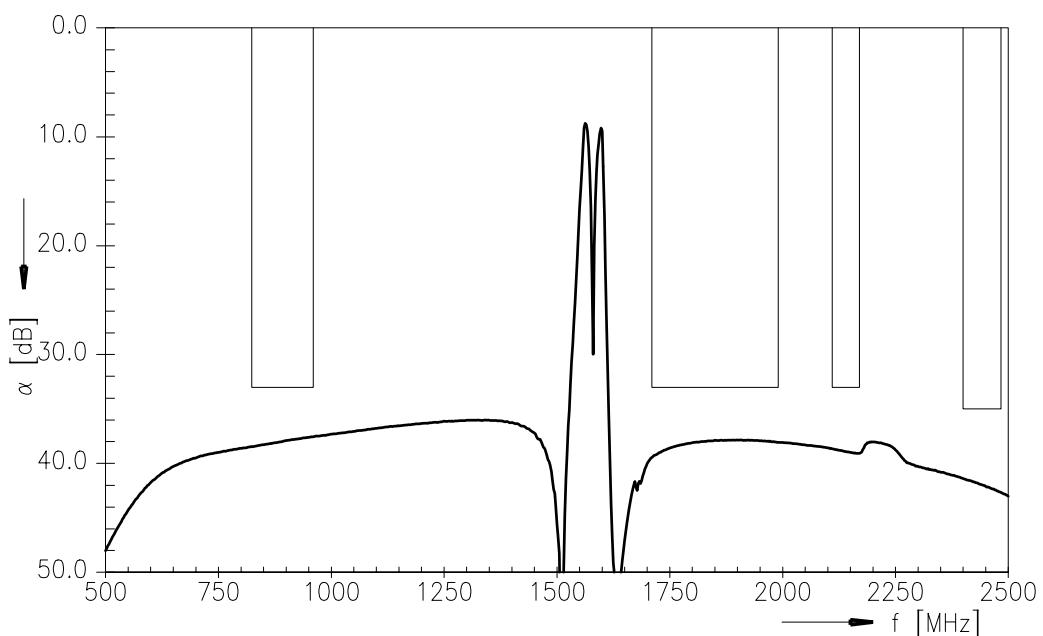
**Data Sheet**



**Antenna - NON-GPS (transfer function for matching circuit 1, all bands):**



**Antenna - NON-GPS (isolation, transfer function for matching circuit 1, all bands):**





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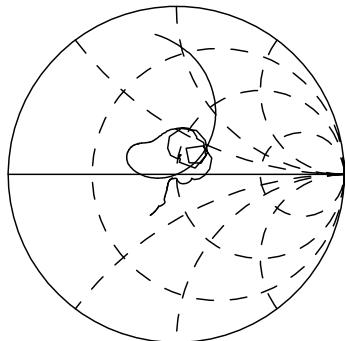
**1575.42 / 859 / 1810 / 1920 / 2140 / 2441.75 MHz**

**Data Sheet**

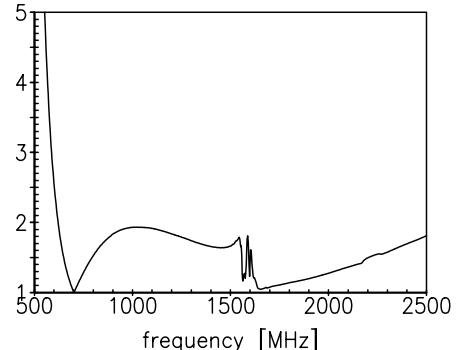


**Smith charts / VSWR (for matching circuit 1, all bands)**

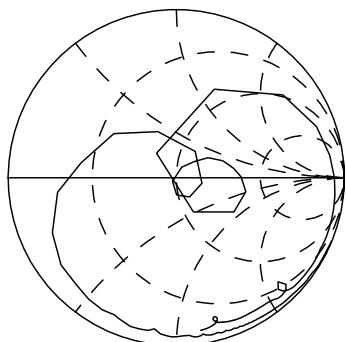
**S<sub>11</sub> Antenna**



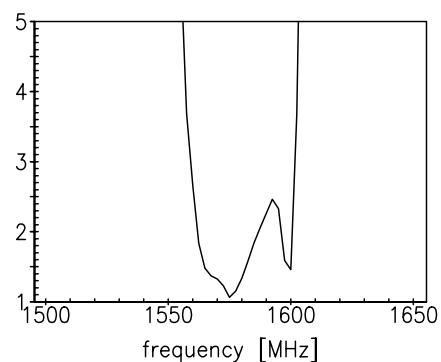
VSWR —



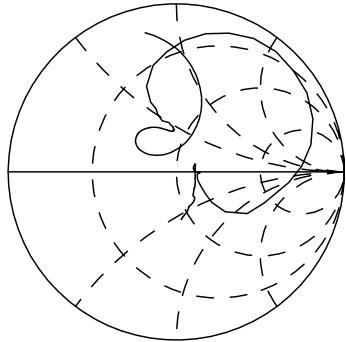
**S<sub>22</sub> GPS**



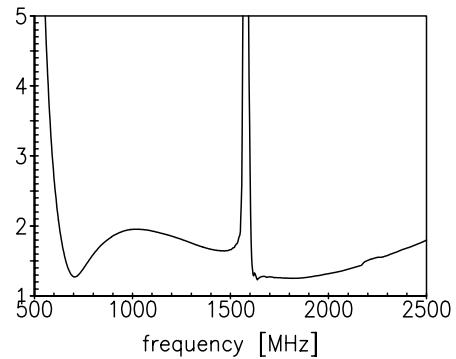
VSWR —



**S<sub>33</sub> NON-GPS**



VSWR —



Please read *cautions and warnings and important notes* at the end of this document.



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**Maximum ratings**

Operable temperature range	T	–30/+85	°C	
Storage temperature range	T <sub>stg</sub>	–40/+85	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 10 pulses
Input power at				
824 ... 960 MHz	P <sub>IN</sub>	31	dBm	
1710 ... 1990 MHz	P <sub>IN</sub>	31	dBm	effective power in the on-state
1850 ... 1990 MHz	P <sub>IN</sub>	31	dBm	continuous wave signal
2400 ... 2483.5 MHz	P <sub>IN</sub>	31	dBm	

<sup>1)</sup> acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



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### References

<b>Type</b>	B7742
<b>Ordering code</b>	B39162B7742E310
<b>Marking and package</b>	C61157-A7-A116
<b>Packaging</b>	F61074-V8153-Z000
<b>Date codes</b>	L_1126
<b>S-parameters (unmatched)</b>	B7742_NB.s3p B7742_WB.s3p
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."
<b>Moldability</b>	Before using in overmolding environment, please contact your EPCOS sales office.

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